



### General Spill Response Considerations

When prevention efforts fail and oil spills on the water, spill responders face a difficult battle against a dynamic and ever-changing opponent. Mechanical response methods, consisting of containment booms, skimmers, and other tools, is the most often used category of response techniques. Because of its limitations, it may be used in concert with non-mechanical methods including dispersants, *in situ* burning, natural removal, and shoreline cleanup.

A skimmer from the Coast Guard's Vessel of Opportunity Skimming System (VOSS) removes oil in its containment boom.

### What Is Mechanical Spill Response?

Mechanical spill response uses physical barriers and mechanical devices to redirect and remove oil from the water's surface. Where feasible and effective, this technique is preferable to other methods, since spilled oil is removed from the environment to be recycled or disposed of properly. Mechanical removal of oil utilizes two types of equipment: booms and skimmers.

Oil containment boom allows water to pass below the boom skirt while stopping the oil floating on the water.

*Oil Containment Booms:* Spilled oil floating on the water's surface is affected by wind, currents, and gravity, all of which cause it to spread. This oil may be concentrated or redirected by deploying floating barriers, called booms. Booms come in many different shapes, sizes, and styles. They are used for concentrating oil so that it is thick enough to be skimmed, for keeping oil out of sensitive areas, or for diverting oil into collection areas.

Just like the oil they are trying to corral, the success of booming is dependent on currents, wind, and waves. Even minor currents can draw oil under the booms; waves may cause splashover, and wind and currents may cause the boom to sink or plane.

A weir skimmer allows oil to spill over a weir at the oil/water interface, where it is then pumped into containment.

*Skimmers:* These devices remove oil from the water's surface and are typically used with booms that concentrate the oil to make it thick enough to be skimmed efficiently. The effectiveness of a skimmer is determined by how quickly it can collect the oil, and how well it minimizes water collected with the oil. Oil collected by the skimmer is stored in a containment tank.

A wide variety of skimmers is available that use different methods for separating oil from water. Vessel-based skimming systems are utilized to remove oil from open water, while vacuum trucks are often used to remove oil that has collected near the shoreline.

## What are the Potential Benefits?

- Physically removes oil from the environment.
- Allows recycling or proper disposal of recovered oil.
- Little direct environmental impacts in open water.

## What are the Potential Tradeoffs?

- Wind, waves, and currents severely limit recovery.
- The advantages of actual oil removal from the environment must be weighed against the limitations of this method. By the time limitations become apparent, it may be too late to employ other countermeasures.

In the event of a spill

- Contact the National Response Center at 800-424-8802

Suggested References about Mechanical Containment & Recovery

- *Oil in the Sea*, National Academy Press 1985
- *Mechanical Protection Guidelines*, NOAA/HAZMAT and U.S. Coast Guard 1994, [response.restoration.noaa.gov/oilaid.html](http://response.restoration.noaa.gov/oilaid.html)
- *Response to Marine Oil Spills*, The International Tanker Owners Pollution Federation, Ltd 1986
- EPA's Oil Program Web site, [www.epa.gov/oilspill/](http://www.epa.gov/oilspill/)
- Coast Guard's Marine Safety and Environmental Protection Web site, [www.uscg.mil/hq/g-m/](http://www.uscg.mil/hq/g-m/)
- NOAA HAZMAT Website, [response.restoration.noaa.gov](http://response.restoration.noaa.gov)
- Oil Spill Intelligence Report's Oil Spill Basics: A Primer for Students, [www.cutter.com/osir/primer.htm](http://www.cutter.com/osir/primer.htm)